

CLAIMS

What is claimed is:

1. An apparatus for mounting a photovoltaic module frame on a roof, the apparatus comprising:
 - 5 a first set of frame members forming a frame of a first photovoltaic module, each frame member in the first set having a plurality of air vents within a perimeter of each frame member and having a mounting portion configured to allow for attachment to a roof of a dwelling.
 2. The apparatus of claim 1 wherein the mounting portion comprises:
 - 10 an outer lip facing an exterior of the frame of the first photovoltaic module, the outer lip having a provision for roof attachment; and
 - an inner lip facing an interior of the frame of the first photovoltaic module, the inner lip having a provision for attachment to a structure that may be attached to a roof.
 3. The apparatus of claim 2 wherein the outer lip is formed opposite to the inner lip.
 - 15 4. The apparatus of claim 1 wherein the mounting portion comprises:
 - an outer lip facing an exterior of the frame of the first photovoltaic module, the outer lip having a provision for roof attachment.
 5. The apparatus of claim 1 further comprising:
 - a second set of frame members forming a frame of a second photovoltaic module,
 - 20 each frame member in the second set having a plurality of air vents within a perimeter of each frame member and having a mounting portion configured to allow for

attachment on the roofing plane, wherein the frame of the second photovoltaic module is in-line with the frame of the first photovoltaic module such that air flows from under the first photovoltaic module to under the second photovoltaic module through air vents.

6. The apparatus of claim 5 further comprising:

5 a mounting hardware attaching an outer lip of a frame member in the first set and an outer lip of a frame member in the second set to a roofing plane.

7. The apparatus of claim 6 wherein the mounting hardware comprises:

a clip clamping an outer lip of a frame member in the first set and an outer lip of a frame member in the second set.

10 8. The apparatus of claim 1 wherein each frame member in the first set further comprises:

a slot for accepting and supporting an edge of the first photovoltaic module.

9. The apparatus of claim 8 wherein the slot runs along a length of a frame member.

10. The apparatus of claim 1 wherein each frame member in the first set comprises:

15 an extruded material.

11. The apparatus of claim 1 wherein the photovoltaic module comprises an array of backside-contact photovoltaic cells.

12. A photovoltaic module assembly comprising:

a photovoltaic module;

a frame surrounding and supporting the photovoltaic module, the frame having a plurality of air vents within a perimeter of the frame and having a mounting portion configured to allow attachment of the frame to a roof.

13. The photovoltaic module assembly of claim 12 wherein the frame further
5 comprises:

an outer lip facing outward of the frame, the outer lip being configured to allow attachment of the frame to the roof and to allow attachment of the frame to another frame.

14. The photovoltaic module assembly of claim 12 wherein the frame further
10 comprises:

an inner lip facing an interior of the frame, the inner lip being configured to allow attachment of the frame to a substructure that may be attached to the roof.

15. The photovoltaic module assembly of claim 12 wherein the frame comprises:
16. The photovoltaic module assembly of claim 12 wherein the frame is attached to a
substructure that is attached to the roof.
17. The photovoltaic module assembly of claim 12 wherein the photovoltaic module
comprises an array of backside-contact photovoltaic cells.
18. A method of installing photovoltaic modules on a roof, the method comprising:
20 framing a first photovoltaic module with a plurality of frame members having a
plurality of air vents;

framing a second photovoltaic module with a plurality of frame members having a plurality of air vents; and

installing the first and second photovoltaic modules on a roof such that air flows through frame members of the first photovoltaic module and into frame members of the
5 second photovoltaic module.

19. The method of claim 18 wherein installing the first and second photovoltaic modules comprise:

clamping an outer lip of a frame member framing the first photovoltaic module together with an outer lip of a frame member framing the second photovoltaic module.

10 20. The method of claim 18 wherein each frame member framing the first and second photovoltaic modules comprises extruded aluminum.